FINAL REPORT:

Panel Review of British Columbia's Drinking Water Protection Act

February 13, 2002

Submitted to:
The Honourable Joyce Murray,
Minister of Water, Land and
Air Protection
and
The Honourable Colin Hansen,
Minister of Health Services

Drinking Water Review Panel

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February 13, 2002

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Dear Ministers Murray and Hansen,

In accordance with the Terms of Reference for the Drinking Water Review Panel, the Panel is pleased to submit its Final Report. Consistent with the Terms of Reference, this Final Report provides recommendations on the completeness, effectiveness and efficiency of the *Drinking Water Protection Act* legislation and amendments to the Water Act passed in April 2001. The Report also includes recommendations relating to implementation of the Act.

During the course of its review, the Panel received approximately 270 submissions from many provincial institutions and members of the public. This interest represents significant support for the provincial government to establish a strong and effective *Drinking Water Protection Act* that ensures safe drinking water for all British Columbians.

We thank you for the opportunity to be engaged in this important process.

Yours Sincerely,

David Marshall
Chair
Drinking Water Review Panel

Executive Summary

The Ministers of Water, Land and Air Protection and Health Services established an independent review panel in September 2001 to review the *Drinking Water Protection Act*, passed in April 2001. The Drinking Water Review Panel has completed its mandate by preparing an Interim Report in December 2001 and this Final Report.

In conducting its review, the Panel invited and reviewed a total of 153 written submissions and 117 completed surveys. The Panel thanks those who participated and acknowledges the value of their contributions.

During the course of the review, the Panel became increasingly aware of the risks to drinking water sources and systems in BC: e.g., source protection is not adequate and may result in expensive water treatment infrastructure improvements, the province has the highest rate of disease outbreaks in Canada and the second oldest water system infrastructure. Many communities have an urgent need and no funding for adequate water treatment and filtration. The Panel learned from the Walkerton tragedy that the human and economic costs of disease outbreaks can be horrific. It has become clear to the Panel that these risks cannot be ignored.

The Panel reached the conclusion that British Columbians are using too much water and paying too little for tap water. It is time that everyone paid the full price of protecting drinking water sources and building and maintaining the infrastructure needed to treat and deliver safe drinking water. It is clear that more funding is needed to reduce the risks to drinking water and pay for the protection everyone deserves. The Panel strongly believes that a collective approach to protecting drinking water is essential: everyone has a contribution to make.

The Panel applauds the contribution made by public health and environment officials who have worked tirelessly with the existing mix of legislation, primarily the Safe Drinking Water Regulation and the *Water Act.* Great improvements have been made over the past decade; however, fine-tuning of the previous mix of legislation is not an option because it focuses exclusively on water systems, and does not adequately consider water sources.

The Panel's overall conclusion is that the Province of British Columbia urgently needs the consolidated legislation that the *Drinking Water Protection Act* provides. The previous mix of legislation made great strides in improving drinking water systems. The *Drinking Water Protection Act*, with amendments recommended by the Panel, will extend this success into the protection of drinking water sources.

This Final Report includes recommendations for improvements to the *Drinking Water Protection Act*, a process to develop and revise regulations, and to address implementation issues. The highest priority recommendations in this report call for:

1. Introduction of the amended *Drinking Water Protection Act* in the Spring 2002 legislative session,
2. Creation of a single Drinking Water Protection Agency reporting directly to the Minister of Health Planning,
3. Strengthening of drinking water source protection measures,
4. Province-wide screening risk assessments of water systems to identify and prioritise critical drinking water supply areas,
5. Creation of a dedicated drinking water protection surcharge applying to a range of user fees, and
6. Development of a comprehensive infrastructure funding program.

Acknowledgements

The Panel would like to thank the 270 individuals and organizations who contributed to the effectiveness of the Panel's review by taking the time and effort to prepare written submissions and complete surveys. Input was received from every region of the province, reflecting a wide range of interests related to drinking water protection. The input received was thoughtful, constructive and very helpful to the Panel in conducting its review of the *Drinking Water Protection Act*.

The Panel also thanks Patricia Howie of Praxis Pacific for her dedication and professional expertise which enabled the Panel to fulfill its requirements in a timely fashion. The Panel members especially acknowledge her outstanding work in assisting them to prepare the Summary of Public Input to the Drinking Water Review Panel, the Interim Report and this, the Panel's Final Report.

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Many Voices, One Call

Drinking Water is on the minds of all British Columbians today as they turn on the tap, read the morning newspaper, hear of new boil-water advisories and buy bottled water in ever-increasing numbers. This heightened awareness has come about, in part, from the tragic events in Walkerton, Ontario and North Battleford, Saskatchewan, where people died or suffered illness because of their drinking water. But even before these events sprang into the national consciousness, British Columbians voiced concerns about drinking water and called for better legislation.

The provincial government initiated public discussion of water policies and legislation in 1993 in a program called Stewardship of the Water. This province-wide public consultation process addressed issues of water quality, but also water pricing, allocation, licensing, conservation, export, and planning. Since that time, many non-government organizations and local governments have engaged the public in multi-stakeholder processes to identify and resolve water quality issues.

At the beginning of 2001, the provincial government held a series of 11 workshops and public meetings throughout the province to listen to public views on a Drinking Water Protection Plan. This Plan and the results of the corresponding consultation formed the basis of the *Drinking Water Protection Act* (DWPA) passed in April 2001.

The Drinking Water Review Panel is part of the continuum of dialogue with British Columbians about drinking water. The Panel process was initiated following development of the *Drinking Water Protection Act* and has the benefit of knowledge gained in these earlier consultation processes.

Taken together, the voices of British Columbians – channelled through various public open houses, workshops, meetings, surveys, and letters – called for a better system of legislated safeguards for drinking water. Factors such as high rates of waterborne disease, global warming, increased population, expansion of resource and community development into water source areas, and reduced availability of new drinking water sources have resulted in demands to take action now, before matters get worse.

Taking Stock of the Risks

Before focusing on how to improve and implement legislation designed to safeguard drinking water, it is important to fully understand what the risks are and why drinking water deserves its own Act and expenditure of limited resources.

The rationale begins with the Auditor General's conclusion in 1999 that "the Province is not adequately protecting drinking water sources from human-related impacts, and that this could have significant cost implications in the future for the Province, for municipal

and regional governments, and for citizens in general.[1]" He also considered the cost of neglecting drinking water sources by estimating that the cost to add filtration to municipalities outside Victoria and Vancouver would amount to $700 million in capital costs and $30 million annually in ongoing costs.

Other health and economic benefits of protecting sources were identified by the Auditor General; including reduction in the levels of water-related illnesses and outbreaks, associated cost reductions related to health care and sick days for those suffering illness, and the avoidance of negative publicity that could affect tourism.

There are many lessons to be learned from the Walkerton tragedy where the human impacts were staggering, with seven lives lost and more than 2300 illnesses. A study commissioned by the Walkerton Inquiry concluded that the tangible costs of the incident were over $64 million[2].. For example, the direct costs stemmed from the eight months that homes and businesses could not use municipal water, disinfection of the entire supply system (from wells to kitchen taps), loss of local businesses, loss of property values, overburdened health units, and investigative units charged with determining the cause and transmission of the outbreak. It also included $9 million estimated for the Walkerton Inquiry and nearly $10 million to remediate and repair the water supply system. The intangible costs associated with the unimaginable human suffering are not quantifiable and therefore not included in these direct costs. However, the same study estimated that society would be willing to spend an additional $91 million to prevent future loss of life and illness similar to what the community of Walkerton suffered (for a total cost of more than $155 million).

Closer to home and more recently, the Provincial Health Officer issued his 2000 Annual Report, focusing on drinking water[3]. The report opens with a statement that BC has the highest rate of intestinal illness of all Canadian provinces and that "Since 1980, there have been 29 confirmed waterborne disease outbreaks in BC caused by such micro-organisms as *Giardia, Cryptosporidium, Toxoplasma* and *Campylobacter.*" Recommendations were made to improve treatment and add filtration where necessary to safeguard against these micro-organisms.

Bad news about water treatment infrastructure is also found in the 1996 Report on the State of Municipal Infrastructure in Canada indicating that on average, BC's water distribution and supply systems were the second oldest in the nation, with an average age of 37 years (the expected life span for mechanical systems is 25 years)[4].

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[1] Auditor General's Report, 1998/1999 - Report 5: Protecting Drinking-Water Sources

[2] The Economic Costs of the Walkerton Crisis, The Walkerton Inquiry, Commissioned Paper 14, John Livernois, Preprint, Toronto, 2001.

[3] Provincial Health Officers' Annual Report 2000, Drinking Water in British Columbia: The Public Health Perspective.

[4] McGill University. 1996. Report on the State of Municipal Infrastructure in Canada. Commissioned by the Federation of Canadian Municipalities.

The lessons are clear:

1. Source protection in BC is not adequate and may result in expensive water treatment costs,
2. The human and economic costs of disease outbreaks such as the one experienced by the community of Walkerton are horrific,
3. BC has the highest rate of disease outbreaks in Canada and the second oldest water system infrastructure.
4. More funding is required to build and upgrade water treatment infrastructure.

Indeed, the risks of not taking dramatic action now are too large to ignore.

Mandate and Process

An independent Drinking Water Review Panel was appointed September 25, 2001 by the Ministers of Water, Land and Air Protection (WLAP), and Health Services (HS), to review the *Drinking Water Protection Act* and make recommendations to government on the completeness, effectiveness and efficiency of the Act, which was passed in April 2001 (see Appendix A for Panel Terms of Reference). These recommendations will be used to confirm, amend or repeal the legislation and guide implementation. The Panel was asked to address the following four matters:

1. The core *Drinking Water Protection Act* (Sections 1-49 of Bill 20) that will be administered by Health Services.
2. The amendments to the *Water Act* for groundwater protection (i.e., Section 98 of Bill 20) that will be administered by the Ministry of Water, Land and Air Protection.
3. The principles for developing and revising regulations (including the Safe Drinking Water Regulation - SDWR) and implementing new regulatory requirements.
4. Specific implementation issues identified by the Ministers of WLAP and HS, e.g., strategic alternatives to funding infrastructure, safeguarding small systems and the best framework to protect groundwater resources.

An Interim Report was submitted to government and the public on December 14, 2001 reporting on items 1 and 2 above, the *Drinking Water Protection Act* (DWPA) and groundwater legislation, including draft recommendations for the spring legislative session.

This final report contains and builds on the material covered in the Interim Report, and addresses items 3 and 4 above (a process for making changes to regulations and implementation issues). Implementation issues are addressed throughout the report where they are relevant and a separate section has been included to address a process for developing and revising regulations. Where there are differences between the

Interim Report and the Final Report, the Final Report should be taken as the Panel's final word.

Panel Process

David Marshall, Executive Director of the Fraser Basin Council, chairs the nine-member Panel that has representation of public health, environmental, industry and local government interests (see Appendix B for information on Panel members).

To assist with the review of Bill 20, the Panel invited input by sending 1,934 letters on October 5, 2001 to all those who participated in the public consultation process used to develop the DWPA in January through March, 2001. News releases were issued on September 25 and November 6, 2001 and material was posted on the Panel web-site (http://www.env.gov.bc.ca/wat/wq/dw/). The invitation outlined three ways to participate:

- Obtain and review the legislation (made available on the web-page or by calling the Panel's toll-free number);
- Complete a five-page survey on paper or on-line by November 9, 2001; and/or
- Provide written submissions by November 9, 2001.

In total, the Panel received 76 written submissions and 117 completed surveys before completing the Interim Report. The input from these sources is summarized in a companion report, "Summary of Public Input to the Drinking Water Review Panel", to assist in the Panel deliberations.

The Panel's Interim Report included an invitation to submit further comments on the DWPA or on the Panel's interim recommendations by a deadline of January 15, 2002. This proved to be an excellent opportunity for the Panel to refine its recommendations in light of valuable input from experts and lay people alike. An additional 77 written submissions were received between November 30, 2001 and January 15, 2002. These submissions are contained in the public file and were considered by the Panel in preparing this final report. The Panel also interviewed selected experts to assist in the review of the Act and submissions to the Panel. Notes of these telephone interviews are contained in the public file.

Due to the time constraints on the panel review, the Panel has not been able to fully explore some matters in detail, including the relationship between the DWPA and other legislation that may affect implementation of the DWPA; a cost-benefit analysis of the Act and its implementation; and an analysis of infrastructure funding alternatives.

Fulfilling the Mandate

The Panel was given direction in its terms of reference to conduct this review of the *Drinking Water Protection Act* with many conditions in mind. The *Drinking Water Protection Act*, together with the Panel's recommendations, meets the following conditions.

Complete	Source protection measures were added to complement the existing water treatment measures. Tap water and treatment standards, water use conservation, allowance for public and First Nations involvement and community right to know were also added to make the DWPA complete.
Effective	Enhanced coordination in the management and protection of drinking water will reduce duplication and conflict between those responsible for water quality.
Efficient	A single agency that makes use of existing resources and provides one window for drinking water will increase efficiencies. Also, costly and time-consuming water quality problems will be prevented by conducting assessments and protecting sources.
Risk Management Approach	The source and system assessments and assessment response plans form the basis of the risk management approach. High priority issues will be identified and addressed. A risk management approach has also been recommended for addressing infrastructure funding issues and developing regulations
Cost-Effective	Recommendations for water conservation will reduce infrastructure costs in the future and new funding sources, through cost-recovery programs, will help meet current funding limitations. Use of existing provincial resources wherever possible has also been recommended.
Streamlined	The DWPA and the single agency will streamline the legislation, regulations and administrative functions. The single agency provides a singly policy focus, raises the importance of drinking water as a resource and enhances public confidence in government's ability to safeguard drinking water.
Results-based	Principles for developing regulations include an outcome-orientation. The assessment and assessment response plans also follow the result-based approach.
Measurable Goals	The Panel recommends standards for water treatment and tap water – both providing measurable goals that will safeguard drinking water.
Defined Responsibility	The Panel has recommended clear accountability for drinking water, including Drinking Water Officers in the regions, the CEO and Board of Directors within the Drinking Water Protection Agency and the Minister of Health Planning as the minister responsible for implementation of the Act.

Lessons From Part One of the Walkerton Inquiry

Just prior to completion of the Panel's mandate, the Honourable Dennis R. O'Connor released his Report on Part One of the Walkerton Inquiry, the results of nine months of hearings. Some of the key issues identified in the Walkerton Inquiry and also addressed in the *Drinking Water Protection Act* and the amendments recommended in this Panel report are highlighted below.

The importance of and need for:

- A rigorous water quality monitoring and enforcement system,
- operator training and certification,
- understanding of the threats to groundwater from surface contaminants, particularly shallow wells,
- immediate public notification when test results indicate public health threats,
- direct involvement of the Medical Health Officer in drinking water matters,
- clear accountability when systems fail,
- better coordination and communication between health officials and environment officials,
- a clearly understood public notification system in the event of poor water quality results,
- maintenance of a database of water sources and systems and their monitoring results, and
- a thorough assessment of the environment and human health risks prior to proceeding with massive provincial government budget reductions in programs that affect drinking water.

Overall Conclusion and Recommendation

The Panel believes that Bill 20, *the Drinking Water Protection Act*, has a number of strong elements and provides a useful framework for bringing together a range of legislative measures related to drinking water. It also gives drinking water the high level of priority and focus it deserves. Other key strengths of the legislation are source and system assessments, new measures for source protection and planning, water system operator certification, the creation of Drinking Water Officers, continuation of the vital role played by public health officials, the ability to create drinking water standards, new measures to protect groundwater and the requirements for reporting and notification.

British Columbia needs this legislation. While the Panel applauds the significant improvement in drinking water made by public health officials using authority in the Safe Drinking Water Regulation enacted in 1992, fine-tuning of the previous mix of legislation is not an option because it focuses exclusively on water systems, and does not adequately consider water sources.

The Panel is confident that with some specific amendments identified below, the legislation will prove to be a workable and effective tool for safeguarding drinking water in British Columbia.

Recommendation 1: Amend the Drinking Water Protection Act

> **Retain the *Drinking Water Protection Act* as a stand-alone Act, amend the Act by incorporating the recommendations of the Drinking Water Review Panel, and introduce the amended Act in the 2002 spring session of the BC legislature.**

Panel Recommendations

Recommendations in this report refer to the *Drinking Water Protection Act* specifically and also to related implementation issues. The bulk of the report refers to components of the Act and includes a mix of recommended changes to the legislation and to implementation of those changes. At the end of the report there are two sections that refer specifically to implementation issues rather than to a single component of the Act: they are funding and developing regulations. Issues regarding the Act are placed in sequence, beginning with the highest priority issues and recommendations.

Authority

Responsibility for drinking water is currently shared between at least ten provincial ministries, with the Ministries of Health Services; Health Planning; Water, Air and Land Protection; and Sustainable Resource Management having the primary roles. The Ministries of Health Services and Health Planning are responsible for broad health matters. Local public health officials deal with specific public health issues and report to regional health boards. The Ministry of Water, Air and Land Protection is responsible for protection of water sources and the Ministry of Sustainable Resource Management is responsible for water allocation (including licences for water use).

Management of drinking water in British Columbia has been criticised for having a history of inter-ministry turf wars, confusion and conflicts. There have been calls from the Auditor General (1999), the Provincial Health Officer (2001), participants in the Drinking Water Protection Plan consultations (Jan. – Mar. 2001) and participants in this legislative review process for better coordination amongst all players, clear responsibilities and accountability, and a single point of contact for the public. Many of these voices have suggested the creation of a single lead agency to take on this role.

The current DWPA retains the split responsibilities and creates two Provincial Drinking Water Coordinators, who would report to two different ministers, one to the Minister of Health Services, and the other to the Minister of Water, Land and Air Protection.

The Panel believes that this framework will perpetuate the lack of coordination and confusion regarding responsibility and accountability. A single lead agency with a clear mandate and functions is required. This agency must be created at the highest level of government with the highest level of power to give safe drinking water the priority it deserves.

The Panel gave considerable attention to the question of accountability and who should be responsible for implementation of the DWPA. The Panel believes that ultimately all drinking water issues, whether related to drinking water sources or systems, are a public health matter and responsibility. Because all matters related to health protection and prevention recently shifted from Health Services to Health Planning, the Panel believes that the Minister of Health Planning is the appropriate minister responsible for implementation of the Act.

Recommendation 2: Appoint the Minister of Health Planning as the Minister Responsible For the Drinking Water Protection Act.

Recommendation 3: Create a Drinking Water Protection Agency

a) **Create a single lead Drinking Water Protection Agency reporting to the Minister of Health Planning, to integrate the skills, resources and authority of all provincial ministries with responsibility for drinking water protection.**

   The purpose of this agency will be to administer and implement the *Drinking Water Protection Act*. Bringing all responsibility under one agency will result in clear authority and accountability for drinking water, from source to tap. A single agency will act as "one window" to the provincial government for the public when they have questions or concerns regarding drinking water issues or implementation of the *Drinking Water Protection Act*. This agency will be multi-disciplinary, recognizing that expertise in protecting water sources and water systems are both complementary and vital to implementation of the Act.

   The mission of the Agency will be to ensure that drinking water in BC is safe.

b) **Appoint a Chief Executive Officer to lead the Drinking Water Protection Agency.**

c) **Create a Board of Directors reflecting the following composition:**

   - **Four provincial government appointees (Deputy Ministers of Sustainable Resource Management; Water, Land and Air Protection; Health Services/Health Planning; and Community, Aboriginal and Women's' Services),**
   - **One First Nation representative,**

- **Two purveyor representatives (Union of BC Municipalities and one purveyor representative),**
- **Two public representatives (reflecting health, environmental, and surface and groundwater interests), and**
- **Two watershed resource industry representatives (e.g., forestry and agriculture).**

The Board will provide strategic direction to the Drinking Water Protection Agency. The diverse composition of the Board reflects the importance of balancing the use of watersheds and sharing responsibility for protecting drinking water. Board members will have a collective responsibility, bringing their respective expertise and interests to bear on implementation of the *Drinking Water Protection Act*. This model of shared decision-making should go a long way toward ending the legacy of resource use conflicts and forge a new process for shared stewardship of our drinking water supplies. Board members will elect their chair and adopt decision-making and dispute resolution processes.

d) Create a Technical Advisory Committee of three to four drinking water experts to provide ongoing advice to the Director of Policy and Planning on a voluntary basis.

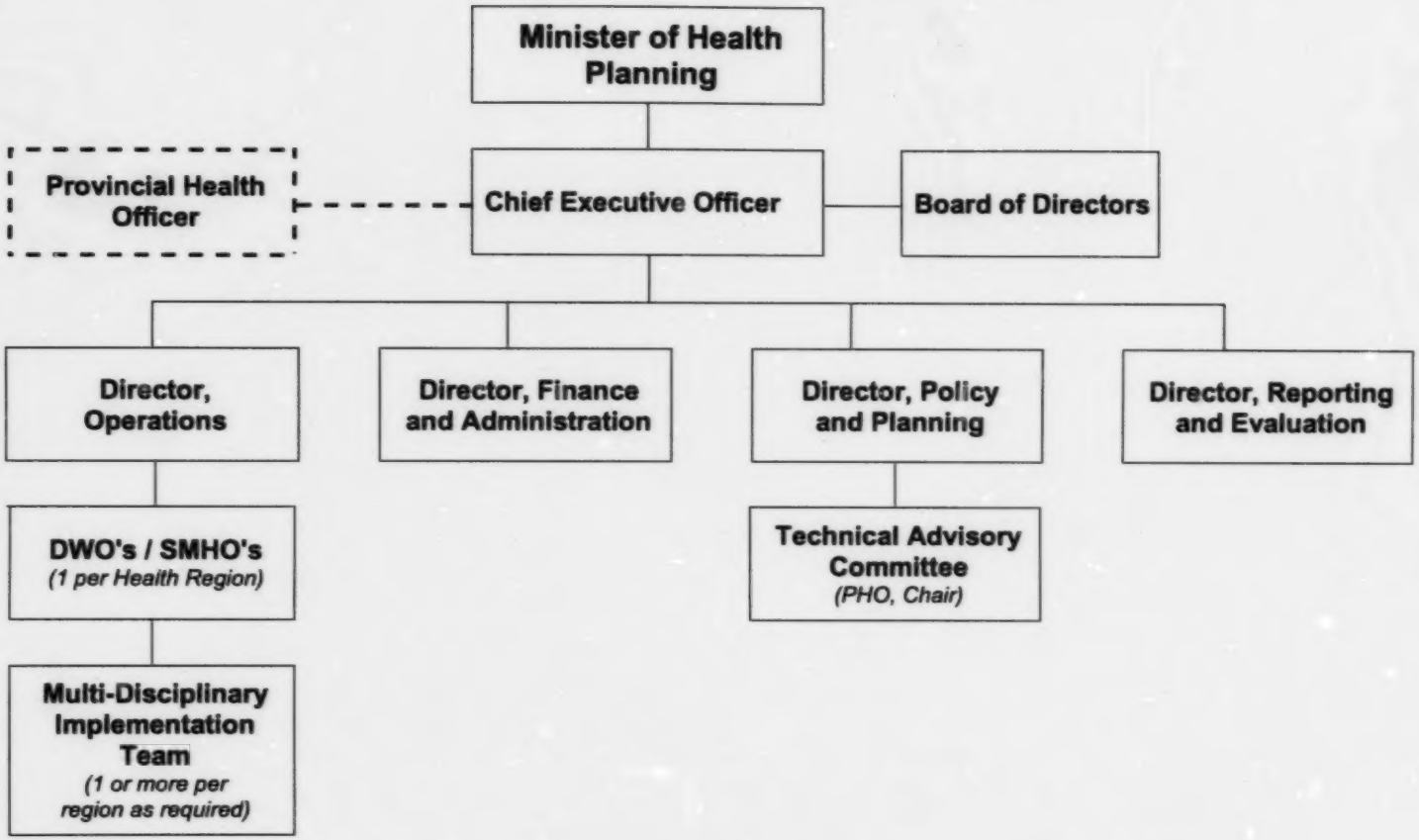
A major purpose of the committee will be to oversee development of regulations and standards pursuant to the DWPA. The Provincial Health Officer will chair the Technical Advisory Committee. Expert Working Groups will be struck by the Technical Advisory Committee when specific tasks arise that require expert advice (See Appendix D for a list of expert working groups recommended in this report) and chaired by a member of the Technical Advisory Committee. The working group members will reflect an appropriate range of expertise to accomplish specific tasks.

e) Form the Drinking Water Protection Agency as a separate agency reporting to the Minister of Health Planning.

The CEO (Deputy Minister level) will report to the Minister, seeking advice from the Provincial Health Officer and the Board of Directors. The CEO will coordinate four Directors (ADM level) with responsibility for Operations, Finance, Policy and Planning, and Reporting and Evaluation. Drinking Water Officers (Senior Medical Health Officers) will be responsible for implementation of the Act in each of the five Health Regions (one per region). The Provincial Health Officer will chair a Technical Advisory Committee that provides advice to the Director of Policy and Planning. A proposed organization structure is shown below. The Provincial Health Officer also has a functional relationship to the Senior Medical Health Officers who will be appointed as Drinking Water Officers. See organization chart below.

Drinking Water Protection Agency

Organizational Structure



DWO = Drinking Water Officer
SMHO = Senior Medical Health Officer

f) **Keep administrative costs down by minimizing the need for new staff (e.g., access experienced provincial government staff in existing positions to assist the agency, use contractor expertise where appropriate, follow a shared service model by setting up agreements with others to deliver services, such as using other ministries and local government.**

g) **Delete all references in the Act to the Drinking Water Coordinators and Drinking Water Advisory Committees as their duties are covered by the structure recommended above.**

h) **Include the following principles in the Agency mandate:**

- **Focus activities in the regions (de-centralize)**
- **Coordinate activities to minimize overlap with those inside and outside the Agency**
- **Maintain clear accountability of decision makers**
- **Provide timely access to services and timely resolution of concerns brought to the Agency**
- **Allocate resources in a fair manner**
- **Remain open and transparent to the public and involve the public in planning and decision making when appropriate**

Recommendation 4: Give the Agency a Strong Mandate to Protect Drinking Water

Include the following functions in the mandate of the Drinking Water Protection Agency:

a) **Develop and oversee an overall strategy for drinking water protection from source to tap;**
b) **Oversee and evaluate effectiveness of the implementation and enforcement of provincial drinking water protection legislation;**
c) **Coordinate the preparation of assessments and assessment response plans;**
d) **Coordinate development, periodic review and revision of standards respecting surface water protection, groundwater protection and water system performance;**
e) **Coordinate development and review of drinking water-related policy from source to tap;**
f) **Coordinate development of a strategy for water purveyor certification;**
g) **Coordinate development of a certification program for well drillers and well technicians.**
h) **Coordinate development of a public education and outreach program;**
i) **Carry out coordination/communications between agencies and other provincial and intergovernmental initiatives;**

j) **Report annually to the legislature and public on the state of British Columbia's drinking water;**
k) **Coordinate design of an integrated data management system, including water use, supply, public health information, source protection, standards and monitoring, and ensure ongoing maintenance;**
l) **Administer conservation, financial and technical assistance programs for local governments and small water service agencies;**
m) **Develop a research and development strategy, fund and co-ordinate implementation;**
n) **Coordinate the review of sub-division applications with respect to drinking water matters, including non-point-source pollution of water sources and availability of drinking water supply;**
o) **Coordinate water allocation and licensing in drinking water supply areas;**
p) **Coordinate development of a provincial water conservation program ("water smart");**
q) **Review all the provincial laws that affect the quality and quantity of drinking water, how those laws contribute to or detract from control of non-point source pollution and protection of drinking water, and make recommendations to reform these laws to improve drinking water protection; and**
r) **Maintain ongoing interaction with other jurisdictions to keep abreast of their experiences and lessons learned related to drinking water protection.**

Source Protection

British Columbian's receive their supply of drinking water primarily from surface sources (75%), including reservoirs, lakes, rivers, streams and creeks and also from groundwater sources (25%). The Panel heard in many submissions that the safety of drinking supply watersheds and aquifers is threatened by multiple uses in the surrounding area, such as forestry activity (including logging, road building and chemical application), agriculture (including cattle grazing and manure and chemical application), urban and subdivision development, septic systems, road transportation, recreation (including swimming and motorized activities), wildlife and mining. Non-point-sources, including stormwater runoff, septic system leakages, and drainage systems are increasingly recognized as important contributors to water quality degradation.

In his 1999 report, the Auditor General concluded that, "...the Province is not adequately protecting drinking-water sources from human-related impacts". The report goes on to suggest that it is more cost effective to protect water sources than to treat contaminated water. The Provincial Health Officer's Report (2001) goes further to suggest that, "If companies or groups degrade the source water quality, they must bear the responsibility and cost of returning water to its original state."

The DWPA has introduced new measures to assist with source protection e.g., assessments, assessment response plans (Part 3), drinking water protection measures (Part 4) and drinking water protection plans (Part 5). Many of the submissions to the

Panel indicated that source protection is not strong enough in the Act, particularly in relation to multiple uses. Some suggested that drinking water should have primacy over other uses, and others thought that some watersheds should be designated exclusively for drinking water use (e.g., watershed reserves).

The Panel supports all four components of the multi-barrier approach advocated in the Auditor General's report, the Walkerton Inquiry, and the Drinking Water Protection Plan:

- There must be management and protection of the water source through effective controls over land uses and pollution sources to prevent contamination;
- There must be appropriate water treatment;
- There must be sound, well-maintained and safe water distribution systems, so that water does not become contaminated in its delivery; and
- There must be effective monitoring of water quality, followed by response to adverse results, and enforcement of standards.

The Panel believes that drinking water must be afforded the highest priority in order to successfully protect drinking water sources from human impacts. Stronger safeguards are required to hold resource users responsible for impacts of their activities on source water quality. This includes a responsibility of the polluter to repair and mitigate damage, stop the harmful activity or pay for additional water treatment costs.

Non-point sources of contaminants present a particular challenge because none of the conventional legal tools can adequately deal with this new and emerging problem. Both the scientific community and the regulatory agencies have been slow in recognizing the problem of diffuse, non-point sources of pollution in watersheds or drinking water supply areas. This is one of the most challenging problems facing drinking water protection agencies because the contribution by individual activities is small but the cumulative effect can be large. With increasing urbanization (stormwater, septic systems), more intensification in agriculture (manure and nutrient management), expansion of forest activities into marginal lands (harvesting and road construction), and long distance atmospheric transport of pollutants, the non-point source problem is now a dominant issue facing most water supply agencies.

Recommendation 5: Strengthen Source Protection Measures

a) Create a "Purposes" section in the Act and include as purposes:
- **to protect water from source to tap,**
- **to protect humans against water-borne disease and long term adverse health effects, and**
- **to give drinking water priority over other resource uses in critical or high risk watersheds (see Recommendation 6 b and c).**

b) Add a clear statement that in critical or high risk watersheds (see Recommendations 6 b and c), the provisions of this Act prevail over any other Acts, and that decision makers under certain specified Acts (e.g.,

Forest *Practices Code, Range Act, Farm Practices Protection Act, Waste Management Act*) must comply with the *Drinking Water Protection Act* when making authorizations or issuing approvals.

c) **Add the ability to create standards that prohibit or limit specific activities that are known to have negative affects on surface and groundwater drinking water sources.**

These standards will become useful tools in planning activities such as the assessment response plans and Drinking Water Protection Plans.

d) **Improve local government's influence and authority in relation to drinking watersheds and groundwater supply areas.**

This may include issues related to public access, recreational activities, and land use decisions that affect water quality in source areas.

e) **Give water purveyors more authority and the means to reduce risks to water sources.**

This may take the form of enforcing Drinking Water Officer Orders through delegation of authority or deputization of purveyors. For example, if the Drinking Water Officer issues an order prohibiting camping and recreation in a specified source area, the purveyor could be given authority to issue tickets to those not complying with the order.

f) **Place the onus on resource users to plan and prove that their activities have no significant impact on source water quality in critical and high risk water supply areas.**

g) **Establish clear liability rules for diminishment of drinking water quality or quantity.**

The rules should follow the principle that resource users are responsible for impacts of their activities on source water quality and quantity and that if diminishment occurs, the resource user must repair and mitigate the damage, stop the harmful activity and/or pay for additional water treatment costs.

h) **Implement a non-point source program that focuses on source control, reducing inputs, pollution detention, and impacts of products on the environment (life cycle analysis). Include regulatory instruments (e.g., regulation of urban development, agricultural practices and septic systems through permits, licences and prohibitions), economic instruments (e.g.,**

l) **subsidies, taxes and tax incentives) and information instruments (e.g., public awareness and training programs). Multi-stakeholder processes will also be required to negotiate agreements between the multiple users of the watersheds.**

Assessment Process

The Act includes provisions requiring purveyors to assess existing and potential problems and risks with the water source and treatment and distribution systems. These assessments will give the purveyor and the users of the system a better understanding of their level of protection and point to actions that may need to be taken to safeguard their water supply.

The need for assessments was supported in many submissions to the Panel; however, there was concern by some over the requirement that the purveyor complete the assessment. The main concerns were lack of funding and capacity to conduct the assessments (particularly small systems) but also a conflict of interest. It was suggested that this activity could be done at the provincial or regional level to avoid duplication of effort.

The Panel believes that assessments are a vital component of the Act and that placing responsibility for assessments solely on the purveyor is unreasonable because they usually lack control over land use in the watershed (this is most often controlled by the provincial government which is responsible for Crown Land, water, lakes and streams). Purveyors will have an important role in providing information for assessments, but the responsibility for coordination and completion of the assessments should be a provincial responsibility. This is similar to the approach taken by the US Environmental Protection Agency.

The Panel also believes that critical or high-risk drinking water sources should be identified up front through a screening process. This will identify water sources that should be addressed on a priority basis and which may require higher levels of protection. This is consistent with a risk management approach.

The Panel has considered opportunities to generate revenue to offset the costs of assessments and includes these in Recommendation 23.

Recommendation 6: Provincial Responsibility for Assessments

a) **Assign Drinking Water Officers responsibility for coordination, review and approval of the assessments.**

b) **Require province-wide screening risk assessments to identify drinking water supply areas that are at high risk of contamination or are already in critical condition. Full source assessments should be conducted in these areas on a priority basis.**

c) **Develop criteria for screening and full assessments, with the assistance of an expert working group, to guide assessments, define the level of risk, and allow for evaluation. This will also include advice on the appropriate timeframe for updating assessments, which may vary depending on the level of risk in the area.**

d) **Develop a cost-sharing formula to fund assessments, that includes participation of the Drinking Water Protection Agency, purveyors and watershed resource users.**

e) **Look for opportunities to minimize duplication by conducting assessments at local and regional scales.**

f) **Include provision for the DWO to initiate public involvement processes in association with assessments.**

Drinking Water Officers

The DWPA introduces a new position of the Drinking Water Officer (DWO), giving new investigative, preventative and remedial powers in relation to drinking water. This new position was one of the key strengths identified by many of those making submissions to the Panel.

The Panel believes that the introduction of Drinking Water Officers is a positive step and that these positions should be incorporated into the existing public health framework rather than creating a new structure that could result in confusion over roles. This will avoid duplication and confusion over roles, particularly with Medical Health Officers and Environmental Health Officers.

A primary role of the Drinking Water Officers will be to coordinate among those who have a role in implementing the *Drinking Water Protection Act*. In keeping with the collective and multi-disciplinary approach recommended for the Board of Directors of the Drinking Water Protection Agency, the Panel believes that Drinking Water Officers should coordinate multi-disciplinary implementation teams at the regional level. This approach will ensure that the necessary resources and policy direction are applied to address drinking water issues in a timely manner.

Recommendation7: Clarify and Strengthen the Role of the Drinking Water Officer

a) **Appoint the existing Senior Medical Health Officers as Drinking Water Officers in the new Drinking Water Protection Agency, one for each of the Health Regions (currently there are five).**

The Drinking Water Officer may delegate his or her authority to others within the region, but will remain accountable for implementation of the *Drinking Water Protection Act* in the region.

b) **Stipulate that Drinking Water Officers will coordinate Multi-Disciplinary Implementation Teams in each of the regions, allowing for more than one team per region as appropriate, to assist with drinking water matters.**

The team will include environment officials including surface, groundwater, and watershed management experts (from the Ministries of Sustainable Resource Management and Water, Land and Air Protection); and public health officials such as Medical Health Officers and Environmental Health Officers (from the Ministries of Health Services and Health Planning), purveyors and other expertise as required (e.g., forestry and agriculture) to cover the necessary disciplines for managing drinking water from source to tap. Given the new requirements for groundwater protection, expertise in hydrogeology – through staff or contract – will be needed in each region.

c) **Provide additional funding to the Senior Medical Health Officers and the Multi-Disciplinary Implementation Teams so they can carry out their new drinking water duties in a timely fashion. Sources of new funds are discussed in Recommendation 23.**

d) **Enable Drinking Water Officers to establish public notification processes, conduct public involvement processes and develop multi-stakeholder advisory processes as required.**

Small Systems

It is estimated that half a million people in British Columbia get their drinking water from small systems; these include systems that supply a single household and small community systems that supply two or more connections (e.g., camp grounds, reserve lands, trailer parks, motels and resorts, small communities). Approximately 60 per cent of small systems have surface sources and the remainder use groundwater. Some of the problems with small systems are lack of awareness and training about proper operation and monitoring and lack of financial resources to safeguard drinking water. In some cases, systems are abandoned or there is no designated purveyor.

The DWPA does not apply to single-family systems but does apply to small systems with two or more connections. The Panel heard from some single-family operators that there is nothing in the Act to help them, particularly when their drinking water quality is affected by surrounding land uses. The Panel also heard from some small system operators (with two or more connections) that the Act is not feasible or affordable for them, especially the requirements for assessment, monitoring and reporting. Some suggested that the definition of a water supply system should be changed to include only those with more connections (e.g., 15 or more).

The Panel recognizes that the Act will be difficult for small system operators and at the same time wants to ensure that there are adequate safeguards in place for British Columbians, whether they are served by a large municipal system or a small neighbourhood system.

Recommendation 8: Recognize Compliance Limitations of Small Systems

a) **Retain the current definition of a water supply system (i.e., two or more connections) in the Act.**

b) **Allow Drinking Water Officers to exempt small systems from certain parts of this Act through their operating permits.**

c) **Enable and develop province-wide regulations outlining the process for issuing exemptions.**

d) **Establish an expert working group to develop the process for issuing exemptions (e.g., timeframe of exemptions, what sections of the Act can be exempt and under what conditions) and define the upper limit to the size of small systems that can apply for exemptions. This will include a recommended approach for addressing small systems that are perpetually non-compliant (may include requirement to amalgamate with larger systems that are in compliance).**

Recommendation 9: Provide Support to Small Systems

The Panel recommends a number of non-legislative (policy) approaches to providing support for small systems.

a) **Develop an education and training program for single-family water system operators. Include information about how to protect the source and how to access a Drinking Water Officer regarding source protection concerns.**

b) **Create and maintain a database of small systems, including unlicensed systems. This will include the identification of the responsible purveyor.**

c) **Develop a program to support small systems with two or more connections. This will include support for the administrative, financial and operational aspects of managing water supply systems.**

Tap Water Standards

The DWPA, as passed in April 2001, included amendments to the Safe Drinking Water Regulation (SDWR), which are pursuant to the *Health Act*. The SDWR included three schedules (A, B and C) that set the *Guidelines For Canadian Drinking Water* as standards for drinking water in BC. On Sept.5, 2001, the provincial government rescinded Schedules B and C, which contain health-related chemical standards and additional chemical and physical standards (respectively), leaving in place Schedule A, which contains microbiological standards (fecal coliform, E. coli, and total coliform).

The DWPA contemplates the creation of tap water standards for water supply systems through an operating permit; it does not enable province-wide tap water standards. The *Safe Drinking Water Regulation (SDWR)* already allows the Ministry of Health Services to set site-specific standards but this power is rarely used.

Province-wide tap water standards are used in other provinces in Canada (i.e., Alberta, Ontario, Quebec and Nova Scotia) and internationally (e.g., USA, UK, European Union and the World Health Organization). In comparison to these other jurisdictions, the standards included in Schedules A, B and C of the April 2001 version of the SDWR are generally less stringent.

The Panel believes that a set of minimum province-wide standards is required to give British Columbians confidence that drinking water has the same safeguards throughout the province. The definition of potable water must also be changed to provide a clearer objective for drinking water in the province.

Recommendation 10: Enable Tap Water Standards

a) **Enable the creation of province-wide tap-water standards, including appropriate physical, chemical and biological parameters, and require appropriate monitoring.**

b) **Appoint an expert working group to consider the Canadian guidelines and standards used in other jurisdictions, and develop an appropriate set of science-based minimum standards for British Columbia and a schedule outlining the appropriate frequency of monitoring.**

c) **Allow for a transition period for implementation of the standards to give purveyors time to change any operations or equipment that may be needed to meet the new standards and to secure funding for the improvements.**

d) **Allow for local standards to supplement or add to province-wide standards.**

e) **Ensure that the tap water standards are enforced.**

Recommendation 11: Redefine "Potable Water"

Define potable water in the Act as, "water that does not contain micro-organisms or any other substances at concentrations that present a potential danger to human health". Standards set through regulation must be consistent with this definition.

Water Treatment and Distribution Standards

Some of the biggest risks to safe drinking water in British Columbia come from microbiological organisms such as bacteria, viruses, and protozoa (particularly *Giardia* and *Cryptosporidium*). Protozoa, which pose the greatest risk to human health from waterborne contamination in BC, are very difficult to measure or monitor in water, making tap-water standards ineffective as a shield against these parasites.

The Provincial Health Officer (2001) concluded, "...setting and implementing treatment standards would minimize the health risks that British Columbians face from waterborne contaminants." Treatment standards set a minimum level of treatment by specifying required reductions (i.e., number of logarithmic reductions) in the concentration of pathogens found in drinking water.

The *Drinking Water Protection Act* provides an option for water treatment standards through the use of terms and conditions on operating permits, but not province-wide standards. Some submissions to the Panel stressed that source protection alone is not enough and that more attention to treatment options and the need for minimum, province-wide treatment standards is required in the Act.

There were also submissions stressing that the best quality treated water is still not safe at the tap if it passes through a faulty distribution system where contamination can occur. The multi-barrier approach to drinking water management recognizes all three stages of drinking water: the source, treatment and distribution. So far, distribution is not adequately safeguarded in the legislation.

The Panel believes that province-wide treatment and distribution standards are a vital component of the multi-barrier approach to safeguarding drinking water. Treatment standards are particularly essential given the risk of illness due to the presence of *Giardia* and *Cryptosporidium* in some BC drinking water sources.

Recommendation 12: Enable Water Treatment and Distribution Standards

a) **Enable the creation of drinking water treatment standards and water distribution standards to protect the public from health hazards associated with drinking water.**

b) Appoint an expert working group to develop appropriate treatment standards **for microbiological, chemical and physical characteristics and a schedule outlining the appropriate frequency of monitoring.**

c) **Appoint an expert working group to develop appropriate water distribution standards, addressing issues such as cross-connection controls, and a schedule outlining the appropriate frequency of monitoring.**

d) **Ensure that the treatment and distribution standards are enforced.**

Drinking Water Protection Plans

Part 5 of the Act allows for development of Drinking Water Protection Plans and the ability to restrict land uses that may compromise water quality. While the ability to create a Plan was generally supported in submissions to the Panel, there was much confusion and also concerns regarding the circumstances under which a Plan would be developed, and why the Minister and Cabinet must be involved. Some assumed that this provision would be used rarely and under specific conditions and others were concerned that the number of requests to develop plans would be overwhelming.

The Panel believes that the link between Drinking Water Protection Plans and the assessment process and the assessment response plans is not clear in the Act, nor is the relationship to other ongoing planning processes.

Recommendation 13: Clarify When a Drinking Water Protection Plan is Required

a) **Demonstrate in the Act, the relationship between the assessment process, the assessment response plans and the Drinking Water Protection Plans.**

b) **Allow for a phased approach that begins with an assessment (or an equivalent understanding of the threats to drinking water) and an assessment response plan. Then, only if there are outstanding threats to drinking water and specific criteria are met, should a Drinking Water Protection Plan process be carried out.**

c) **Develop a clear set of triggers or criteria to clarify the conditions under which a Drinking Water Protection Plan is to be considered.**

Recommendation 14: Change the Authority to Develop a Drinking Water Protection Plan

a) **Give the Drinking Water Officer the authority to coordinate and develop the plan and then report to the Chief Executive Officer of the Drinking Water Protection Agency.**

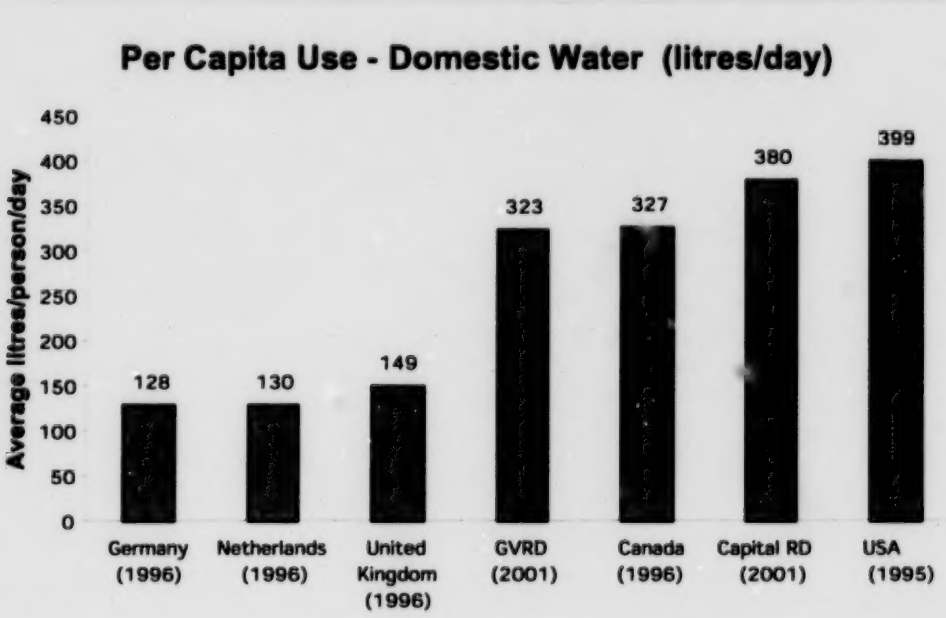
b) Refer issues related to province-wide policy to Cabinet or a Provincial Advisory Committee, not matters related to the management of individual systems.

Recommendation 15: Clarify Relationship to Other Planning Processes

Clarify in the Act that other planning processes (e.g., Land and Resource Management Plans, Water Use Plans, Five-Year Forest Plans, Official Community Plans) must comply with the Drinking Water Protection Plans.

Water Use Conservation and Efficiency

The protection of drinking water quality is closely tied to the issue of water use, or water quantity. Per capita water consumption rates in BC and across Canada are among the highest in the world, e.g., the Canadian average is more than double that of industrialized nations of Europe such as Germany, the Netherlands and the United Kingdom. Only the US has a higher rate of water consumption than Canada.



Reductions in water use translate into lower costs for water supply infrastructure and sewage infrastructure and benefit the natural environment. There are a variety of highly effective conservation tools that can be used to reduce treated water consumption rates (e.g., the combination of water meters and volumetric pricing can reduce domestic

consumption by 15 – 30% on average and using untreated water for irrigation can dramatically reduce treatment costs for agricultural use).

Many submissions to the Panel pointed out the need to encourage water use conservation and efficiency. In particular, it was suggested that by reducing water use, the costs of water treatment could be reduced, perhaps enough to offset new costs to upgrade systems and protect water quality. Some suggested water rate increases and water metering to reduce demand for water.

The Panel believes that new measures to encourage water use conservation should be incorporated into the Act along with related policies and programs.

Recommendation 16: Encourage Water Use Conservation

a) **Develop a "Water-Smart" conservation program that sets provincial water conservation objectives and specific targets to encourage more efficient use of water, thereby lowering drinking water and wastewater treatment costs. A water conservation objective should be added to the Purposes section of the Act.**

   The 1998 Water Conservation Strategy prepared by the Ministry of Environment, Lands and Parks will provide a good starting point for this program.

b) **For those systems that apply for financial or operational assistance in managing their water systems, make it a condition of assistance that they meet the provincial water use conservation objectives.**

c) **Include drinking water conservation and promotion of the provincial water conservation objective in the Drinking Water Officer's responsibilities.**

d) **Develop additional demand management tools and policies similar to the requirement to review water use as a condition of granting a water licence**

e) **Develop public education and incentive programs for conservation efforts such as water metering, leak detection, line pressure reduction, and drought-resistant landscaping (xeroscape).**

f) **Conduct a full inventory of water licences, including those that are not presently used and those that have not been used for a prescribed number of years. Use the authority of the Water Comptroller under the Water Act to revoke the unused licenses.**

g) **Introduce requirements that new developments use water-efficient materials and technology (e.g., low flow toilets, shower heads and appliances).**

Groundwater

It is estimated that 750,000 people in British Columbia rely on groundwater as their drinking water source. Protection of this drinking water source has become a major issue in areas such as the Fraser Valley and Osoyoos where the aquifers (underground sources of water) have elevated levels of nitrate from agricultural activities and septic systems. Salt-water intrusion may also be an issue in some of the Gulf Islands and bacteriological contamination of private domestic wells is an issue across the province.

The Auditor General's 1999 report said, "we found disturbing signs that groundwater in British Columbia is at risk and believe there is a need to protect it. If not addressed now, groundwater degradation could necessitate costly treatment and heavy investment in alternative drinking water sources". The report highlights the vulnerability of unconfined aquifers, where water levels are close to ground surface.

The DWPA introduces new groundwater protection requirements such as well-head protection, construction, testing and reporting standards, in addition to certification for well drillers and well technicians (i.e., pump installers). There was a great deal of support in the submissions to the Panel for the introduction of new groundwater measures and recognition that this is a step in the right direction. There were also many suggestions for improvements and additional measures.

The Panel believes that stronger measures are needed to protect groundwater from the impacts of land uses above aquifers, particularly from agriculture, urban runoff, septic systems and borehole drilling. Also, given the vulnerability of shallow wells, additional measures are needed to ensure that shallow wells are constructed in a manner that protects groundwater, particularly in unconfined aquifers.

The Panel recognizes the need for licensing large capacity commercial wells and the bottled water industry, particularly in areas where water quantity or quality are at risk. This will help to prevent situations where new wells adversely affect existing nearby water users.

The Panel sees the value in collecting information on all groundwater use to allow for better management of this resource. Registration of all wells would greatly assist in collection of this information. Any well registration charge levied should be modest.

Recommendation 17: Improve Groundwater Measures

a) **Add the ability to create standards that prohibit or limit specific activities that are known to have negative affects on surface and groundwater drinking water sources (repeated from recommendation 5c).**

   Specific land uses that may need regulation include septic system density, fertilizer and nutrient applications, stormwater detention ponds, use of chemicals

(pesticides, caustic industrial chemicals, petroleum products) and use of stormwater to recharge aquifers.

b) **Modify the requirements for minimum distances of septic systems from groundwater wells by considering an outcome-based approach (a fixed distance is inappropriate because it is highly dependent on the geology and soil formation).**

c) **Amend the current *Drinking Water Protection Act* to include a requirement for proper abandonment and sealing of all temporary boreholes/wells that penetrate the water table, including geotechnical boreholes (other than those used for monitoring purposes).**

d) **Repeal Section 69 (3) that exempts those constructing shallow wells (less than 15 meters in depth) and geotechnical wells (other than those used for monitoring purposes) from being qualified well drillers or acting under the supervision of a qualified well driller or hydrogeological professional.**

e) **Allow for licensing and registration of groundwater through regulation. Licence all large capacity wells (i.e., wells above a defined threshold volume equal to the volume typically required to service a single family dwelling) and wells that supply water systems (i.e., two or more connections). Apply a modest registration fee for unlicensed wells.**

f) **Allow for licensing of bottled water derived from both groundwater and surface sources.**

Scope of the Act

The Act contains a number of provisions that duplicate or correspond to similar sections in the Safe Drinking Water Regulation. This generates confusion and questions about whether or not the Safe Drinking Water Regulation would be eliminated. As well, many submissions to the Panel expressed the view that the Act was overly complex and needed streamlining.

Recommendation 18: Streamline the Act and Consolidate Regulations

a) **Streamline the *Drinking Water Protection Act*, moving some specific sections into regulation. The wording of the *Drinking Water Protection Act* should be retained, as in some cases the language is stronger than existing regulations.**

b) **Move the Safe Drinking Water Regulation from the *Health Act* to the *Drinking Water Protection Act* and consolidate with the other regulations pursuant to the *Drinking Water Protection Act*.**

The sections to be included as regulations to the *Drinking Water Protection Act* are shown in Appendix C.

Opportunity For Appeal

The legislation introduces a number of new powers and gives the Drinking Water Officer a great deal of authority to issue orders. Several submissions to the Panel pointed out the lack of an appeal process to the provisions in the Act. The appeal would benefit water suppliers, water users, and members of the general public concerned with drinking water quality protection. Appeals to specialized administrative tribunals are commonly provided with health and environmental protection laws.

An existing appeal process in BC is the Environmental Appeal Board, established in 1981 under the Environment Management Act. It is an independent agency that hears appeals from administrative decisions related to environmental issues. The Environmental Appeal Board plays a role in ensuring the protection of the environment by providing a final quasi-judicial access point for public and industry to appeal environmental administrative decisions. The Board ensures that administrative decisions relating to the environment are fair and objective.

The EAB hears appeals from administrative decisions made under the *Pesticide Control Act, the Waste Management Act, the Water Act, the Wildlife Act, the Commercial River Rafting Safety Act and the Health Act.*

The Panel believes that an appeal process is essential and that the existing Environmental Appeal Board is an effective tool for this purpose.

Recommendation 19: Allow for Use of The Environmental Appeal Board

> **Allow for an individual adversely affected by a decision of the Drinking Water Officer or the Drinking Water Protection Agency to appeal that decision to the Environmental Appeal Board.**

Drinking Water Quality Protection for First Nations

Constitutional responsibility for First Nations land rests with the federal government. The application of provincial laws to First Nations is a complicated legal question.

The Panel believes that drinking water should be safe to drink for all British Columbians, whether it is consumed on or off First Nations lands.

Recommendation 20: Ensure Drinking Water Quality Protection for First Nations

Work with First Nations and the federal government to ensure that the provisions of the *Drinking Water Protection Act* are enacted on First Nations land, through whichever legal and fiscal mechanisms are most appropriate.

Community Right To Know

Many submissions to the Panel spoke about the public's basic right to information about the quality of drinking water. Some spoke of frustrating experiences trying to get information, particularly from small system purveyors.

The Annual Report of the Provincial Health Officer (2001) concluded that "the public has a right to know the results of monitoring their water supply" and goes on to say that this is required for public accountability and that it is common in other jurisdictions (e.g., the US *Safe Drinking Water Act* requires mandatory annual reports by water suppliers to the consumers about the water they provide.) Large water purveyors and health regions (e.g., in Greater Vancouver, Greater Victoria, and the Fraser Valley) are now making information available on the internet, but this is not done consistently around the province or by smaller purveyors.

The Panel believes the public has the right to know about the state of their water, and the ability to compel authorities to act to protect water quality. The Panel believes that water purveyors should provide local authorities and the public with easy access to information about water quality.

Recommendation 21: Incorporate Community Right To Know Principles

a) Include community right to know provisions in the *Drinking Water Protection Act.*

Information to be made accessible to the public should include:

- the results of chemical, physical, and microbiological monitoring of their drinking water supply
- an interpretation of the health significance of the analytical results
- an explanation of the cause and efforts to rectify the situation if the results demonstrate problems,
- source and system assessments,
- protection plans,
- orders issued by the Drinking Water Officers
- information on water sources and water flows
- regional information on water quality and water information on what to do during boil-water advisories

b) Ensure that information about the quality of drinking water is accessible from each water system purveyor and also from a central database with province-wide data.

Funding Issues

The Panel recognises that there will be considerable costs associated with implementation of the Act through the Drinking Water Protection Agency and also providing financial support to purveyors as they endeavour to meet the new requirements.

Funding issues are most acute for small water systems because typically they do not have capital reserve funds for maintenance, replacement and upgrades of water supply infrastructure (especially a concern given the number of old and deteriorating systems in the province) or for system expansion. Meeting requirements of the DWPA will add to the cost of providing drinking water (e.g., monitoring, assessments and operator certification).

A related issue is that many small systems and all Improvement District systems, which service anywhere from a few to several thousand water users, do not have access to senior government infrastructure grants or low interest-rate debt financing services provided by the Municipal Finance Authority. The inability of these systems to maintain, upgrade and expand their systems is putting the safety of their drinking water at risk.

Funding was by far the biggest obstacle raised by the public when they were asked about implementation of the Act. And at the same time, they said additional funding was absolutely essential if any improvements to the system were to be realised. The public also had related fears about ongoing cost cutting within government and privatisation of water supply systems warning that both threaten the safety of drinking water. A common suggestion among submissions for delaying costs associated with expansion of systems was to aggressively promote water conservation programs. Others suggested that users pay a higher rate for water to cover more of the costs of providing safe drinking water.

Two important questions to consider in raising the price of drinking water are ability to pay and wiliness to pay. In 1996 it was estimated that households were paying an average of $250 per year for water[5]. That translates into $20.83 per month – less than the monthly cost of a cable television or telephone connection. Using the 1996 Canadian average rate of domestic water consumption (327/lites per day[6]) and the 1996 average cost ($250/year), we were paying about $0.002 per litre for tap water. Today people line up to pay $2.00 for half a litre of bottled water (that has even fewer regulatory checks and balances for water quality than most tap water). When water costs are put against other common household costs, it looks very affordable, and given the increasing sales of bottled water and in-home water filters, people are willing to pay

[5] Environment Canada. 1996. Municipal Water Pricing Database (MUP).
[6] Environment Canada. 1996. Municipal Water Use Database (MUD).

much more for water they believe is safe. We have also learned from studies in the aftermath of the Walkerton tragedy that society is willing to spend $91 million to avoid human impacts similar to those suffered by the community of Walkerton.[7].

The Panel believes that British Columbians are using too much water and paying too little for it. At present, fees paid by water users are not adequate to cover ongoing infrastructure costs or the costs associated with ensuring that the drinking water is safe (e.g., water quality monitoring and reporting, watershed assessment and planning, and enforcement of regulations).

The Panel believes that additional resources are required to overcome existing shortfalls in funding available for infrastructure and to support implementation of the DWPA. In particular, the Drinking Water Officers will need additional funds to carry out their duties. These funds should be derived from all those who benefit from the provision of safe drinking water and collected in a manner that is consistent with full-cost accounting.

The Panel believes that a comprehensive program of infrastructure funding is required in the province, giving particular attention to small systems.

The Panel did not review the pros and cons of privatising drinking water systems or explore this as an option for funding infrastructure. Instead, the Panel focused efforts on ensuring that the appropriate checks and balance are in place to ensure accountability and adherence to strict standards, no matter who is building or operating drinking water systems, and recommends other ways to acquire funds needed for infrastructure.

Recommendation 22 Develop a Cost-Sharing Formula

Develop a cost-sharing formula that fairly distributes the costs of providing safe drinking water. Sources will include:

- **Provincial government (general revenue)**
- **Resource users (e.g., forestry, mining, agriculture)**
- **Water licence holders**
- **Residential water users (through purveyors)**

Recommendation 23: Enable Creation and Collection of a Drinking Water Protection Surcharge

Consistent with the principle of full cost accounting and cost recovery enabled through legislation, the ability to create a drinking water protection surcharge that is dedicated exclusively for use in drinking water protection (including funding to support Drinking Water Officers and the Multi-Disciplinary Implementation Teams in each health region). The surcharge

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[7] The Economic Costs of the Walkerton Crisis, The Walkerton Inquiry, Commissioned Paper 14, John Livernois, Preprint, Toronto, 2001.

will fund all new costs (above current resources dedicated in various ministries to drinking water) attributable to implementation of the *Drinking Water Protection Act*. Surcharges, in varying and appropriate amounts, could be added to fees charged to those who make use of water or are engaged in activities that may adversely affect drinking water, such as the following:

- **Stumpage fees for logging crown land in drinking water supply areas;**
- **Grazing leases and licences for cattle grazing in drinking water supply areas;**
- **Mining licenses or fees;**
- **Camping, golf green fees, parking or other outdoor recreation fees;**
- **Subdivision development charges;**
- **Septic system approvals;**
- **Water licence fees for surface water. This will translate into increased water rates for those receiving drinking water from a licensed water supply system;**
- **Water licence and registration fees for groundwater users;**
- **Water licence fees for bottled water operations; and**
- **All tickets, fines and penalties associated with enforcement under the Act.**

The Panel notes that the Ministry of Sustainable Resource Management is currently eliminating the backlog of water licence applications and reviewing the licence system and fee structure. The Panel is encouraged by this and recommends that the above cost-recovery approaches be considered in the review.

Recommendation 24: Develop a Comprehensive Infrastructure Funding Program

a) **Implement a risk management program to set priorities and focus expenditure of resources.**

b) **Encourage and provide incentives for purveyors to charge rates that reflect the true cost of the water supply system and also build up 10-year capital reserve funds for ongoing maintenance and future upgrades (e.g., through dedicated surcharges).**

This will help to reduce the number of crisis situations each year when systems fail suddenly, and reduce over-dependence on infrastructure grants from senior governments.

c) **Develop a 5-Year business plan to address the provincial government's costs associated with supporting infrastructure upgrades and expansion.**

d) **Give priority to drinking water treatment proposals over proposals not related to drinking water when granting funds under federal-provincial infrastructure programs.**

e) **Develop a Long-Term Strategy For Small Systems that meets the goal of ensuring safe drinking water for all British Columbians.**

f) **Develop a Long-Term Strategy For Improvement District Systems that meets the goal of ensuring safe drinking water for all British Columbians.**

In developing this strategy, consider the implications of current provincial policy that does not allow Improvement Districts to apply for infrastructure grants or debt financing.

Regulatory Development and Amendment Process

The Panel was asked to consider appropriate principles for developing, revising and implementing regulations. Submissions to the Panel provided a wealth of advice on the subject and are reflected in the following list of principles recommended by the Panel. A key element of the process for developing and revising regulations is the use of a Technical Advisory Committee (TAC) to ensure that regulations are science-based. The principles and TAC process are described below.

Some submissions also provided specific advice on the Safe Drinking Water Regulation, and other regulations to be developed pursuant to the *Drinking Water Protection Act*. As these regulation-specific details are beyond the scope of the Panel, they are not addressed in this report. The detailed comments have been passed on to government for their consideration when regulations are amended and developed. The process outlined below will assist in guiding appropriate regulatory amendments and new regulations.

Recommendation 25: Follow a Set of Principles in Developing and Revising Regulations

a) **Provide meaningful opportunities for the public and those directly affected by regulations to participate in the process (e.g., by seeking their advice on key elements and then providing an opportunity to comment on draft regulations);**

b) **Set priorities on the basis of risk to human health and focus efforts on the regulations that will have the greatest impact on reducing human health risks (some priorities identified to the panel were tap water standards, treatment standards, operator qualification standards);**

c) **Review regulations and standards used in other Canadian and international jurisdictions and how effective they have been in reducing health risks in a cost-effective manner;**

d) **Base regulations on the best available science and research involving experts throughout the process;**

e) **Ensure regulations are cost-effective;**

f) **Follow an outcome-based approach wherever possible, using the best available science to determine the appropriate outcome (this will allow for timely integration and approval of new technology);**

g) **Ensure regulations are clear, measurable, achievable and realistic; and**

h) **Review, evaluate and update regulations on a regular basis.**

Recommendation 26: Appoint Expert Working Groups to Assist With Regulations

a) **Appoint a series of expert working groups as and when required to assist with the development, amendment and implementation of regulations. The expert working groups will report to the technical advisory committee and be chaired by a technical advisory committee member.**

The expert working groups will comprise a cross-section of experts in relevant fields. They will review existing standards and guidelines where they exist, compare them with other jurisdictions and make recommendations for appropriate BC standards. Their recommendations will then form the basis of a public and stakeholder consultation process to refine the regulations. See Appendix D for a list of expert working groups recommended in this report.

b) **Follow these steps in developing or amending regulations**

- **Identify regulatory priorities on the basis of risks to public health;**
- **Once the need for a new regulation or an amendment is determined, consult with stakeholders and the public on key elements and principles;**
- **Appoint expert working group to review current regulations in BC and other jurisdictions and make recommendations to the Board;**
- **Develop draft regulations or amendments based on the expert working group recommendations and review with stakeholders and the public; and**
- **Finalize the regulations and apply an appropriate transition period for compliance.**

Appendix A: Panel Terms of Reference

PURPOSE

The Panel will undertake a focussed review of the *Drinking Water Protection Act* (DWPA) and provide recommendations on its completeness, effectiveness and efficiency to the Ministers of Water, Land and Air Protection (WLAP) and Health Services (HS). These recommendations will be used to confirm, amend or repeal the legislation and guide implementation. The Ministers want to:

- Verify if the DWPA provides an effective risk management framework for the provision of safe drinking water in a cost effective manner;
- Make sure the Act is streamlined and results-based; and
- Make certain that there are measurable goals, defined responsibilities and clear accountability for implementation.

SCOPE

- The core *Drinking Water Protection Act* (Sections 1-49 of Bill 20) which will be administered by Health Services.
- The amendments to the *Water Act* for groundwater protection (i.e. Section 98 of Bill 20) which will be administered by WLAP.
- The principles for developing, revising regulations (including the Safe Drinking Water Regulation) and implementing new regulatory requirements
- Specific implementation issues identified by the Ministers of WLAP and HS, e.g., strategic alternatives to funding infrastructure, safeguarding small system and the best framework to protect groundwater resources.

PROCESS

The review process will include:

- Review of submissions, background material and previous public/stakeholder input; and
- Involvement of interested parties through a survey seeking comments on the legislation.

MEMBERSHIP

- An independent chair will be appointed by the Ministers of Water, Land and Air Protection and Health Services;
- The following organizations representing a wide range of interests will be invited to designate a panel member:
  - Medical Health Officers Council
  - Chief Environmental Health Officers/Public Health Engineers Council
  - Union of BC Municipalities
  - BC Water Supply Association
  - BC Environmental Network
  - BC Ground Water Association
  - BC Medical Association
- The Ministers will appoint one watershed management expert to provide panel expertise on source water protection and community involvement in land use choices.

Appendix A: Panel Terms of Reference

DELIVERABLES

The following two reports will be submitted to the Ministers and made available to the public.

1. By November 30, 2001 – A review the *Drinking Water Protection Act* (DWPA) and groundwater legislation including draft recommendations for the spring legislation session.

2. By January 15, 2002 - Recommendations regarding the DWPA and groundwater legislation including a process for making changes to regulations and specific implementation issues identified by the Ministers.

3. The Panel will cease to exist at the conclusion of these tasks.

ROLES AND RESPONSIBILITIES

Chair

- reports to the Ministers of Water, Land and Air Protection and Health Services;
- acts as the spokesperson for the Panel;
- convenes the Panel meetings and sets the meeting agendas;
- ensures balanced input from all interested parties;
- ensures reports reflect consensus where possible and the full range of views on issues where there is not consensus; and
- ensures reports are delivered on time.

Panel Members

- communicates with Panel members and represents the interests of their respective organizations and sectors; and
- reviews background material, participates in meetings and conveys written input for Panel deliberations.

Appendix B: Panel Members

Jim Fyfe, President of the B.C. Groundwater Association and part owner and manager of a well drilling and water services company near Qualicum Beach on Vancouver Island.

Robert Hobson, Chair of the Okanagan Basin Water Board and director at large of the Union of B.C. Municipalities. He is a professional planner and public administrator.

Dr. Andrew Larder, Medical Health Officer and Manager of the Health Protection Program for the Fraser Valley Region. Also trained and worked as a family doctor in Alberta.

David Marshall, Chair, Executive Director of the Fraser Basin Council and a professional engineer. In 1998, he received the National River Conservation Award of Merit from the Canadian Heritage Rivers System for his outstanding contribution to river conservation in Canada.

Dr. William Meekison, Study Investigator and Medical Consultant for Westcoast Clinical Research in Port Coquitlam, clinical professor in the faculty of medicine at the University of British Columbia and a member of the environmental health committee of the B.C. Medical Association.

Linda Nowlan, Executive Director of West Coast Environmental Law Association. She has practised environmental law since 1984; interests include legal protection of biodiversity, water and ocean law, public participation and international environmental law.

Dr. Hans Schreier, Professor at West Water Research, Institute for Resources and Environment at the University of British Columbia. Specializations include watershed analysis, land-water interactions, water and soil pollution, and geographic information systems.

Bruce Wilson, Chair of the Water Supply Association of BC since 1998 and was Vice-Chair from 1995 to 1998. He is the General Manager of Rutland Waterworks District and an instructor for the water operations certification program run by the BC Water and Waste Association.

Serge Zibin, Chief Environmental Health Officer for the Kootenay Boundary Health Region. He chairs the Chief Environmental Health Officers Council and is a member of its Water Issues Committee and Environmental Advisory Committee.

Appendix C: Streamlining Act and Consolidating Regulations

Move the following sections of the *Drinking Water Protection Act* (DWPA) into regulations pursuant to the DWPA, deleting the corresponding sections of the Safe Drinking Water Regulation (SDWR). Move all remaining sections of the SDWR into a consolidated set of regulations pursuant to the DWPA.

Section of DWPA	***Contents***	***Corresponding Section of SDWR***
6 (a)(b)	Water supply systems must provide potable water	5(1)
7 (1) – (6)	Construction permits and requirements for water supply systems	2 (1) – (5)
8 (1) – (6)	Operating permits and requirements for water supply systems	4 (1) – (6)
9	Qualification standards for persons operating water supply systems	No corresponding section
10 (1)(2)	Emergency response and contingency plans	7 (1) – (3)
11 (1) – (3)	Water monitoring requirements	5 (3)
12 (1) – (3)	Notice if immediate reporting standard not met	5 (4)
13 and 14	Water supplier must report threats to drinking water and public notice of threats to drinking water	3 (1)(2)
15	Public notification of other information	No corresponding section
23 and 24	Prohibition against contaminating drinking water or tampering with system and requirement to report threats to drinking water	No corresponding section
25 and 26	Hazard abatement and prevention orders and orders respecting contraventions	3(3) and 5(1) – (3)
27, 28 and 29	Action in default, direct action by drinking water officer and request for investigations	No corresponding section

Note: Section 45 of the DWPA (prohibition against providing false information or obstructing officials) corresponds to Section 8 of the SDWR and should remain in the DWPA because the fines are higher in the latter.

Appendix D: List of Expert Working Groups

The following five Expert Working Groups have been recommended by the Panel. The Technical Advisory Committee may establish other Expert Working Groups as required.

Assessments

Develop criteria for screening and full assessments to guide assessments, define the level of risk, and allow for evaluation. This will also include advice on the appropriate timeframe for updating assessments, which may vary depending on the level of risk in the area.

Exemptions for Small Systems

Develop the process for issuing exemptions (e.g., timeframe of exemptions, what sections of the Act can be exempt and under what conditions) and define the upper limit to the size of small systems that can apply for exemptions. This will include a recommended approach for addressing small systems that are perpetually non-compliant (may include requirement to amalgamate with larger systems that are in compliance).

Tap Water Standards

Consider the Canadian guidelines and standards used in other jurisdictions, and develop an appropriate set of science-based minimum standards for British Columbia and a schedule outlining the appropriate frequency of monitoring.

Water Treatment Standards

Develop appropriate treatment standards for microbiological, chemical and physical characteristics and a schedule outlining the appropriate frequency of monitoring..

Water Distribution Standards

Develop appropriate water distribution standards, addressing issues such as cross-connection controls and a schedule outlining the appropriate frequency of monitoring.